



Multidimensional Calculus of Variations

Winter Term 2012/13

ALEXANDER MIELKE

Lecture times:

Thursday 9:15–10:45 h, Rudower Chaussee 26, Hörsaal 0307

13:15–14:45 h, Rudower Chaussee 25, Raum 1.013 (Hörsaal 100)

Starting Date: Thursday October 18, 2012

Exercises:

still to be decided; **starting in the second week only**

Office hours:

Thursday 15:00-16:00 h at Room 2.104 (RUD 25)

and after special arrangement (via e-mail) at WIAS

Literature

Functional analytic foundations: [Alt85]

Central basic works: [EkT76, Dac89, Tro96, Dac04]

More advanced material: [BaP86, Str90, BIB92, GiH96a, GiH96b]

[Alt85] H. W. ALT. *Lineare Funktionalanalysis*. Springer-Verlag, Berlin, 1985.

[BaP86] V. BARBU and T. PRECUPANU. *Convexity and optimization in Banach spaces*. D. Reidel Publishing Co., Dordrecht, third edition, 1986.

[BIB92] P. BLANCHARD and E. BRÜNING. *Variational methods in mathematical physics*. Texts and Monographs in Physics. Springer-Verlag, Berlin, 1992.

[Dac89] B. DACOROGNA. *Direct Methods in the Calculus of Variations*. Springer-Verlag, Berlin, 1989.

[Dac04] B. DACOROGNA. *Introduction to the calculus of variations*. Imperial College Press, London, 2004.

[EkT76] I. EKELAND and R. TEMAM. *Convex Analysis and Variational Problems*. North Holland, 1976.

[GiH96a] M. GIAQUINTA and S. HILDEBRANDT. *Calculus of Variations I. The Lagrangian Formalism*. Springer, Berlin, 1996.

[GiH96b] M. GIAQUINTA and S. HILDEBRANDT. *Calculus of Variations II. The Hamiltonian Formalism*. Springer, Berlin, 1996.

[Str90] M. STRUWE. *Variational Methods. Applications to Nonlinear Partial Differential Equations and Hamiltonian Systems*. Springer-Verlag, Berlin, 1990.

[Tro96] J. L. TROUTMAN. *Variational calculus and optimal control*. Undergraduate Texts in Mathematics. Springer-Verlag, New York, 1996.